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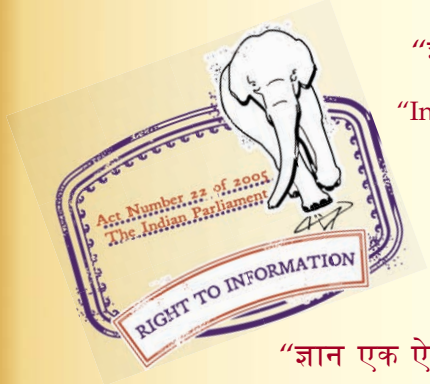


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IS : 3383 - 1982

# *Indian Standard*

# SPECIFICATION FOR WETTABLE SULPHUR POWDER

## *( Second Revision )*

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**BUREAU OF INDIAN STANDARDS**
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

**Gr 3** *February* 1983

# *Indian Standard*

# SPECIFICATION FOR WETTABLE SULPHUR POWDER

## *( Second Revision )*

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# AMENDMENT NO. 1 OCTOBER 1988

## TO

# IS : 3383 - 1982 SPECIFICATION FOR WETTABLE SULPHUR POWDER

## *( Second Revision )*

( *Page* 4, *Table* 1 ) — Add the following note at the end of the table:

'NOTE — The material shall not be subjected to accelerated storage treatment if it has crossed half of its shelf life as ascertained from its date of manufacture and date of expiry declared on the container.'

( AFCDC 6 )

Reprography Unit, BIS, New Delhi, India

# AMENDMENT NO. 2 MAY 1994
# TO
# IS 3383 : 1982 SPECIFICATION FOR WETTABLE SULPHUR POWDER

*( Second Revision )*

*( Page 4 Table 1 ):*

a) Sl No (ii), col 2
b) Sl No (iii), col 2
} — Delete the words 'after accelerated storage'

*(Page 6, clause 4.1 )* -*Substitute* the following for the existing:

'When freshly manufactured material in bulk quantity is offered for inspection, representative samples of the material shall be drawn and tested as prescribed in IS 10627 : 1983 within 90 days of its manufacture When the material is offered for inspection after 90 days of its manufacture, sampling shall be done as prescribed in IS 10627 : 1983 However, the criteria for conformity of the material when tested, shall be the limits of tolerances, as applicable over the declared nominal value and given under clause 2 2 1 of the standard '

# *Indian Standard*

# SPECIFICATION FOR WETTABLE SULPHUR POWDER

# *( Second Revision )*

## 0. FOREWORD

**0.1** This Indian Standard ( Second Revision ) was adopted by the Indian Standards Institution on 30 September 1982, after the draft finalized by the Pest Control Sectional Committee had been approved by the Agricultural and Food Products Division Council and the Chemical Division Council.

**0.2** Wettable sulphur powder is largely used for the control of pests and diseases in the field of agriculture.

**0.3** Wettable sulphur powder is generally manufactured to contain 80 percent ( *m/m* ) of sulphur.

**0.4** This standard was first issued in 1965 and subsequently revised in 1975. Some of the requirements like sulphur content and suspensibility were changed through the issue of three amendments. In the present revision, the various requirements have been reviewed in the light of experience gained in the country. Opportunity has also been taken to refer IS:8190 ( Part I )-1980* for packing requirements.

**0.5** In the preparation of this standard due consideration has been given to the provisions of the *Insecticides Act*, 1968 and the Rules framed thereunder. However, this standard is subject to the restrictions imposed under these, wherever applicable.

**0.6** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS:2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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## 1. SCOPE

**1.1** This standard prescribes the requirements and the methods of sampling and test for wettable sulphur powder.

*Requirements for packing of pesticides: Part I Solid pesticides ( *first revision* ).
†Rules for rounding off numerical values ( *revised* ).

## 2. REQUIREMENTS

**2.1 Description** — The material shall be in the form of a homogeneous powder, pale yellow to brownish in colour, and shall wet readily on mixing with water, providing a suspension suitable for use as a spray.

**2.2** The material shall also comply with the requirements given in Table 1.

TABLE 1 REQUIREMENTS FOR WETTABLE SULPHUR POWDER

| Sl No. | Characteristic | Requirement | Method of Test, Ref to | |
|---|---|---|---|---|
| | | | Appendix | Cl.No. of IS: 6940-1982* |
| (1) | (2) | (3) | (4) | (5) |
| i) | Sulphur content, percent by mass, *Min* | Nominal value as declared on the container ( *see* 2.2.1 ) | A | — |
| ii) | Material passing through 45 micron IS Sieve†, after accelerated storage, percent by mass, *Min* | 99·9 | — | 11·1 |
| iii) | Suspensibility, after accelerated storage, percent by mass, *Min* | 80 | — | 11 2 |
| iv) | Wettability, *Max* | 120 seconds | — | 11·4 |
| v) | Arsenic ( as As ), percent by mass, *Max* | 0 01 | B | — |

*Methods of tests for pesticides and their formulations ( *first revision* ).

†*See* IS : 460 (Part I)-1978 Specification for test sieves: Part I Wire cloth test sieves ( *second revision* ). BS sieve 350, ASTM sieve 325 and Tyler sieve 325 have their appertures within the limits specified for the above IS test sieve and may, therefore, be used as 45-micron IS sieve.

**2.2.1** *Sulphur Content* — When determined by the method prescribed in Appendix A, the observed sulphur content, percent ( *m/m* ), of any of the samples shall not differ from the declared nominal value by more than the percent tolerance limits indicated below:

| *Nominal Value, Percent* | *Tolerance, Percent* | |
|---|---|---|
| up to 9 | +10<br>− 5 | of the nominal value |
| Above 9 and below 50 | ± 5 | |
| 50 and above | + 5<br>− 3 | |

**2.2.1.1** The actual value of sulphur content in the formulation shall be calculated to the second decimal place for rounding off to the first decimal place before applying the tolerances given in **2.2.1**.

**2.2.1.2** The average content of all the samples shall not be lower than nominal content.

## 3. PACKING AND MARKING

**3.1 Packing** — The material shall be packed as per requirements given in IS:8190 ( Part I )-1980*.

**3.2** The container shall bear legibly and indelibly the following information and any other information as required under the *Insecticides Act and Rules*:

a) Name of the material;

b) Name of the manufacturer;

c) Date of manufacturer;

d) Batch number;

e) Net mass of contents;

f) Nominal sulphur content, percent ( *m/m* ); and

g) The cautionary notice worded as in *Insecticides Act and Rules.*

**3.2.1** Each container may also be marked with the ISI Certification Mark.

NOTE—The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution ( Certification Marks ) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

*Requirements for packing of pesticides: Part I Solid pesticides ( *first revision* ).

## 4. SAMPLING

**4.1** Representative samples of the material shall be drawn as prescribed in 'Indian Standard methods for sampling of pesticides and their formulations' ( *under preparation* ).

NOTE — Till such time the standard under preparation is published samples shall be drawn as agreed to between the concerned parties.

## 5. TESTS

**5.1** Tests shall be carried out by the prescribed methods referred to in col 4 and 5 of Table 1.

**5.2 Quality of Reagents** — Unless specified otherwise, pure chemicals and distilled water ( *see* IS:1070-1977* ) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

# APPENDIX A

[ *Clause* 2.2.1 and *Table* 1, *item* (i) ]

## DETERMINATION OF SULPHUR CONTENT

### A-0. PRINCIPLE OF THE METHOD

**A-0.1** The sulphur present in the formulation is converted to thiosulphate and then determined iodimetrically.

### A-1. REAGENTS

**A-1.1 Sodium Sulphite** — crystalline.

**A-1.2 Liquid Paraffin**

**A-1.3 Formaldehyde** — 40 percent ( *v/v* ).

**A-1.4 Acetic Acid Solution** — 20 percent ( *v/v* ).

**A-1.5 Standard Iodine Solution** — 0·1 N, freshly prepared.

**A-1.6 Starch Indicator Solution** — 0·5 percent, freshly prepared.

**A-1.7 Carbon Tetrachloride**

*Specification for water, distilled quality ( *revised* ).

## A-2. PROCEDURE

**A-2.1** Weigh accurately sufficient quantity of the sample to contain 0·1 g of sulphur and transfer it to a Erlenmeyer flask, add 30 to 40 ml of water, 2 g of sodium sulphite and about 1 to 2 ml liquid paraffin.

**A-2.2** Attach the condenser, warm gently until the sulphur has dissolved, then boil it for 40 minutes, cool and remove the condenser. Add 10 ml of formaldehyde, 10 ml of acetic acid and 25 ml of carbon tetrachloride to the solution to remove the paraffin. Titrate immediately with the standard iodine solution using starch solution as indicator.

**A-2.3** Carry out a blank determination on the reagents.

## A-3. CALCULATION

**A-3.1** Sulphur content, percent by mass $= \frac{0{\cdot}03206\,(v-V)\,N \times 100}{m}$

where

$v$ = volume, in ml, of the standard iodine solution required for the test with the material ( *see* **A-2.2** );

$V$ = volume, in ml, of the standard iodine solution required for the blank determination ( *see* **A-2.3** );

$N$ = normality of the standard iodine solution; and

$m$ = mass, in g, of the sample taken for the test.

# APPENDIX B

[ *Table* 1, *item* (v) ]

## DETERMINATION OF ARSENIC

## B-0. METHOD

**B-0.1** For the determination of arsenic ( as As ) the modified Gutzeit method as prescribed in IS:2088-1971* shall be followed. The procedure for the preparation of the solution for the test method shall be as prescribed in **B-1**.

*Methods for determination of arsenic ( *first revision* ).

## B-1. PREPARATION OF THE SOLUTION

**B-1.1** Weigh 10 g of the material into a 500-ml Kjeldahl flask. Add 40 ml of a mixture of 2 volumes of bromine and 3 volumes of carbon tetrachloride, and allow the flask to stand for 30 minutes with occasional shaking. Add 50 ml of arsenic-free concentrated nitric acid, dropwise, swirling the flask continuously, and occasionally putting into an ice-bath to prevent over-heating and excess fumes. If any unoxidized sulphur remains at the end of this treatment, add again 5 ml of bromine-carbon tetrachloride mixture and 10 ml of nitric acid. When all the sulphur is oxidized to sulphuric acid, place the flask on a steam-bath to drive off the bromine and carbon tetrachloride slowly, and then on a hot-plate until fumes of sulphur trioxide are evolved. If the resulting solution is not colourless, cool, add 10 ml of nitric acid, and repeat the evaporation on the hot-plate until fumes of sulphur trioxide are evolved. Finally, cool the solution, add 50 ml of water, and evaporate to fumes of sulphur trioxide. Usually two or three additions of water with subsequent evaporation are necessary to remove the last traces of nitric acid from the sulphuric acid formed.

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